

ACCOUNTING FOR SUSTAINABILITY: WHAT NEXT? A RESEARCH AGENDA

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Abstract: *This working paper responds to increasing calls for more and different forms of accounting research involvement in accounting for sustainability. It seeks to provide background, clarify the accounting research issues, and suggest research methods. The background analysis indicates that accounting for sustainability must go beyond supplemental reporting of ecological and social information to include such emerging issues as integrated reporting of sustainability information along with financial reporting. Additional emerging issues are needs of users of sustainability reports, auditing and other assurance of sustainability information, and sustainability implications of financial failure, accounting and auditing failures, and lack of enforcement. Analysis of integrated reporting against traditional financial accounting theory concepts of the purpose of financial reporting and the postulates of going concern, reporting entity, monetary unit, and time period, indicates a need for substantial changes in the traditional financial accounting model if sustainability issues are to be integrated. The agenda concludes with five research issues and methods:*

- *An accounting research framework for sustainability using general systems theory approaches that have been useful for similar emerging issues.*
- *Reporting of sustainability information which has been the focus of most research to date, and the emerging important topic of integrated reporting.*
- *Users of sustainable information, their uses and perceived needs, an area that has been largely neglected in research to date.*
- *Auditing and assurance issues that are taking on greater importance as more users demand assurance for sustainability information. Issues include standards to be used and users' expectations and reactions.*
- *Financial distress and sustainability consequences of accounting and enforcement failures that are just now being recognized as sustainability issues.*

Keywords: *accounting for sustainability, integrated reporting, needs of users, audit, assurance*

JEL codes: *M41, O16, M42*

1. Introduction

In recent months, calls for more accounting involvement in sustainability issues have become stronger, more frequent, and more urgent. As discussed below, though, there is no common notion of sustainability, especially in an accounting context. For this research agenda, we tentatively, as a starting point, draw upon the classic economist Sir John Hicks who developed the concept of consumption being what would leave a

person as well off at the end of the period as at the beginning of the period. Our working notion of sustainability is that a sustainable entity is one that is as well off at the end of a period as at the beginning with respect to use of all resources: e.g. environmental, human, ecological, social, financial, and technological.

Much of the previous research has used the definition of sustainability developed by Buntland (1987) over 25 years ago for the

World Commission of Environment and Development of the United Nations. Buntland's definition focuses on sustainable development ensuring that it meets current needs without sacrificing needs of future generations (quoted and cited by Kasperiet, 2011). Buntland's definition while innovative and ground-breaking for the time, can be seen as somewhat obsolete for the current era of research into accounting for sustainability. Among other things, it focuses on external sustainability, i.e. sustainability of ecological and social systems, while the current focus of research into accounting for sustainability is on sustainability of an entity, usually sustainability. As the research agenda progresses, especially with the development of a research framework, a more comprehensive definition of sustainability is expected.

Despite no common notion, the terms "sustainability" and "accountability", usually in environmental and social contexts, are being used widely. New journals are being launched to publish research exclusively or primarily on accounting for sustainability, e.g. *Social and Environmental Accountability Journal* and *Sustainability Accounting, Management, and Policy Journal*. A recent major international academic accounting conference of the International Association for Accounting Education & Research (IAAER) held in Singapore in November, 2010, featured panel discussions of practitioners and academics that called clearly for more involvement of academics to do research in accounting for sustainability, notably in auditing, but also in other accounting roles. At another recent international academic accounting conference, Asian Pacific Conference on International Accounting Issues held in Australia in November 2010, a speaker from a governmental pension fund agency in Australia was somewhat critical of academic accountants' lack of involvement in accounting for sustainability; she indicated that if the academic accountants did not get

more involved soon, some other groups would.

Thomas L. Friedman, a *New York Times* columnist and award-winning author, in his recent book on sustainability, *Hot Flat and Crowded*, Release 2.0 (2009), has explicitly used accounting terminology (discussed in more detail below) to describe inadequacies of current accounting practice for sustainability. Major international business-oriented newspapers write about essentially the same issues. Dedicated research in sustainable investing has been ongoing for some five years. Notably, the Sustainability Investment Research Platform (SIRP) (www.sirp.se) in Sweden has been a world leader in such research. It is now recognized by SIRP and others that accounting for sustainability is the ongoing next major research area.

The Principles of Responsible Investment (PRI) Academic Network of the UN (<http://academic.unpri.org/>), among other things, publishes the RI Digest of academic research articles in sustainability. Increasingly, the RI digest has been reviewing accounting research articles, notably about disclosures, e.g. Solomon and Solomon, (2006), reported and reviewed in December 2010. The Centre for Social and Environmental Accounting Research, Accountability, Transparency, Sustainability (CSEAR) (<http://www.st-andrews.ac.uk/~csearweb/>) has been created at the University of St. Andrews in the UK to provide information resources, sponsor workshops, and other activities to help researchers and scholars exploring social, environmental, and sustainability accounting, auditing and reporting and related topics.

In the immediate Middle Eastern revolutionary activity, the terms "sustainable", "accountability", "transparency", and the like are being spoken casually and loosely. The Kuwait Fund in its paid advertisements touts investments in sustainable ventures. News commentators talk about sustainable regimes as opposed to

stable regimes. Opposition protestors demand transparency and accountability. It is obviously *much* too soon to develop research implications for accounting for sustainability for these activities. Nonetheless, the increasing use of the jargon of accounting for sustainability cannot be ignored.

One of the major issues in accounting for sustainability it is the lack of a common notion of accounting roles in sustainability, nor even what constitutes sustainability in an accounting context. The various notions of sustainability and accounting for sustainability, while not conflicting, and indeed complementary, reflect a need for a more detailed accounting research agenda to identify research issues, establish more precise concepts, definitions, and notions to provide near-term future directions. This paper and the agenda it presents are intended to represent a first step in that direction by giving structure to identifying and discussing specific groups of research issues for accounting for sustainability, along with possible methodologies and data sources. The remainder of this paper is organized as follows:

Section 2 presents background information underlying the groups of research issues that are identified.

Section 3 analyzes issues in accounting for sustainability with respect to traditional accounting practice, notably the four postulates of accounting.

Section 4 Presents specific research issue along with research methods and sources. Some of these issues are better developed than others.

Section 5 gives a concluding discussion including identifying contributions of the research.

2.0. Background

During the past few years, many accounting academics, and indeed many accounting practitioners, have viewed sustainability almost exclusively as representing

environmental, i.e. ecological, and sometimes social issues, and sustainability reporting as telling how 'green' and socially responsible a company has been. This view of sustainability reflects a common view developed over 25 years ago by the Brundtland commission of the United Nations (UN) that sustainability is meeting needs of current generations without sacrificing future generations' needs (Brundtland 1987). A large number of academic publications reflects this view (e.g. Adams 2010, Gray 2010, and sources cited by them). Panelists at the IAAER conference (2010), however, were clear that current approaches to sustainability reporting are too narrow and inadequate for many reasons; especially the notion of accounting for sustainability is much broader than mere environmental (ecological) and social reporting and the role of accounting involvement must be much broader to include such activities as risk assessment and providing assurance including auditing.

It is now widely recognized, but not well documented in academic publications, that sustainability goes beyond mere environmental (ecological) and social issues, and includes sustainability of an enterprise as a business involving production, sales, and marketing, as well as being sustainable financially, legally, and in other similar ways. Poor environmental (ecological) and social performance can indeed lead to unsustainable business activity as evidenced by such phenomena as consumer boycotts of some large retail enterprises that were viewed as selling products made by suppliers using child labor and other socially and environmentally unacceptable practices. Users of financial information consistently indicate a desire to have more information to allow them to assess sustainability and risk related to sustainability. Thomas L. Friedman (2009), the award winning author mentioned in the introduction, links both financial sustainability in the recent financial crisis and environmental sustainability as being part of the same phenomenon: inadequate accounting

that does not adequately consider risk: If the true risks involved in these subprime mortgages or default insurance had been priced into these products, they would never have been rated the way they were. Investors would have been much more wary and demanded much higher yields before buying them, which would have forced the mortgage brokers to be more careful in deciding to whom to give these mortgages and the banks to be more careful in choosing which ones to bundle. (Friedman 2009, pg. 15).

While pricing of products might be viewed as a marketing issue, under IFRS and accounting standards of most industrialized countries, valuation of the cost of the products sold and the inventory of buyers would require an adequate risk assessment to measure amounts in financial statements of both sellers and buyers. Furthermore, the principle of going concern applies to all valuations in financial statements and underpricing of financial risk raises serious issues of going concern. The going concern principle is essentially the same as sustainability when making financial accounting valuations. (Going concern issues are discussed in more detail shortly.) As a result, sustainability failures in the recent financial crisis related to inadequate pricing of risk in products are indeed issues of accounting for sustainability. Then, when writing about environmental issues discussing a 2005 report of the Millennium Ecosystem Assessment of the United Nations, Friedman comments:

Yet because most nations do not put a price on [the natural resources consumed] they too are ‘underpriced’ and therefore overexploited—with the profits privatized and the losses socialized. (Friedman 2009 pg. 25)

Then quoting the World Wild Life Fund’s Living Planet 2008 Report:

‘The world is currently struggling with the consequences of over-valuing its financial assets, but a more fundamental crisis looms ahead—an ecological credit crunch caused by undervaluing the environmental assets that

are the basis of all life and prosperity.’ (Friedman 2009 pg. 25).

Under current accounting standards, the value of ecological resources used would not normally be used to measure product prices or report values in financial reports; thus Friedman seems to advocate a new accounting paradigm for accounting for sustainability that incorporates use of environmental and social resources in accounting measurements. In both of these situations, as well as throughout the book, Friedman, a well read, literate, and articulate writer, but a non-accountant, uses accounting terminology to link both financial and ecological sustainability failures and attribute the cause of both to the same phenomenon, underpricing of assets and products sold due to failure to consider sustainability risk. Similar calls for a new accounting model to incorporate external costs have been made by others, e.g. the Accounting for Sustainability Group (2006) and Epstein (2008).

Recent attention to so-called integrated reporting has come from the Accounting for Sustainability Project

(www.accountingforsustainability.org) among other places. As discussed in more detail shortly, this project includes initiatives of the International Integrated Reporting Committee (IIRC)

(<http://www.integratedreporting.org/>) to develop a new reporting model that will better reflect the interconnected impact of financial, environmental, social and governance factors. There is, however, no common notion of what constitutes integrated reporting. Many believe that ‘integrated’ is merely including environmental and social information along with financial information, while others view ‘integrated’ as incorporating sustainability factors within accounting measurements.

3.0. Accounting for sustainability with Respect to Traditional Accounting

When environmental (ecological), social, and other social issues reporting are viewed from

the perspective of accounting for sustainability, many issues emerge that have not yet been addressed and now need to be examined from the perspective of traditional accounting and financial reporting practice.

3.1. Integrated reporting

The recent call for integrated reporting involves reporting sustainability issues in parallel with financial reports, incorporating sustainability issues in accounting measurements in financial reports, or both. Many inconsistencies arise, though, that have not been considered and should be analyzed along with respect to traditional financial reporting theory and concepts. Among the inconsistencies that arise, in Anglo-Saxon countries, the purpose of financial reporting is expressed as assessing the likelihood and timing of future cash flows, thus implying that accounting measurements should be ultimately related to cash flow. The theory adds, though that future cash flows are best assessed by accrual accounting. Many of the suggestions about including sustainability into accounting measurements would not involve direct future cash flows, such as use of environmental resources, unless for circumstances when a carbon tax or carbon permits might be assessed. Therefore, it would be very difficult to include such measurements without changing a major aspect of traditional financial reporting theory that exists in most countries. Also, the conceptual framework of the IFRS, US GAAP, and similar concepts of accounting principles in many countries contain the following four fundamental postulates, although these concepts predate both IFRS and the US GAAP conceptual frameworks, and terminology varies.

- Going concern
- Reporting entity
- Monetary unit
- Time period

The **going concern** concept assumes that an entity will be in business for the foreseeable future and will be able to realize its assets and

complete its obligations. This concept affects valuation bases for measurements of many items on financial reports. It is also the basis for auditors' reports on financial statements. Sustainability is essentially the same concept as going concern because lack of sustainability implies lack of a going concern, and a sustainable entity must necessarily be a going concern. As discussed in more detail shortly, well-known going-concern failures such as Enron and sub-prime mortgage collapses have resulted massive social costs and clearly represent lack of sustainability.

The **reporting entity** concept defines the entity for which financial reports are prepared. Traditionally, financial reports are prepared for an economic entity, usually defined in legal terms as being a consolidated group in which one dominant entity controls of the group. With integrated financial reporting, the appropriate reporting entity for sustainability reporting may differ considerably from the reporting entity for financial reporting purposes. As two examples: First, recent publicity about retail companies that sell clothes made by child labor, and similar situations in other industries, indicate that transparent and informative reporting should include the entire supply chain in an entity's sustainability reporting. Second, as has been discussed recently, the environmental impact of a company's products is also a significant element to be considered in assessing a company's sustainability so the reporting entity for integrated reporting might consider customers or other users of a company's products.

Traditional financial reporting is based on **monetary units** in which all non-monetary items are reported as an equivalent monetary amount. Almost all environmental and social information in reports to date are in narrative non-monetary terms. Under some notions of integrated reporting, environmental and social information would be incorporated into accounting measurements. Also as discussed above, Friedman (2009) and others imply a

new accounting in which environmental risk, which included financial risk, is incorporated into product pricing. Under the costs attach principle of traditional financial accounting, costs are included in product prices and similar measurements if there is a payment (or similar actual use of resources owned); there has been no measurement method to incorporate use of “free” environmental resources nor potentially damaging environmental resources through emissions of such things as carbon dioxide and other greenhouse gases. Carbon trading schemes are in their earliest stages of development in Europe and some other places, but so far no accounting measurement has been proposed to include the cost of carbon emission purchases into products and similar accounting measurements. Figge and Hahn (2004) in their Advance project have developed the Advance Model (see also <http://advance-project.org>) in which, among other things, sustainable value added is computed in monetary terms for various types of emissions. These sustainable values, though, are not incorporated into accounting measurements, but could conceivably be reported in integrated reports. Sustainable values as now computed are more suitable for management control and management accounting purposes.

Under the **time period** concept, traditional financial reporting is based on specific time periods, almost always one year, based on perceived users’ needs for timely information covering discreet time periods of optimal length to make meaningful decisions. Two approaches have traditionally been used although with variations among countries: First the revenue-expense approach measures revenues earned during a year to derive a profit for the year; assets and liabilities are residuals. Second, the asset-liability approach measures assets and liabilities at the end and the beginning and of a year, subtracting the difference as profit for the year divided into revenues and expenses. The asset-liability approach has been adopted by IFRS and US

GAAP, but the revenue-expense approach remains in some countries, notably Finland. The asset-liability approach is clearly more compatible with sustainability accounting as indicated in the introduction because it focuses on consumption of resources that would leave a company as sustainable at the beginning as at the end. Nonetheless, both approaches are problematic for integrated reporting because of the rigid notion of financial reporting that occurs in annual increments. Many issues of sustainability relate to long term consequences for the environment, for example from past environmental damage as in the oil fields of Nigeria and coal mining regions of the U.S, and damage from emissions over the life cycle of products like automobiles.

3.2. Auditing and other assurance

The panel discussion at the IAAER conference (November 2010) clearly contained a call for accounting researchers to be involved in additional roles in accounting for sustainability, notably auditing. Users of financial information, notably investors, it is claimed, need, almost demand, increasing levels of assurance on sustainability information, notably assurance of information in management commentaries and environmental reports. The anecdotal statements claim that investors require such assurance in order to make proper risk assessments of sustainability, especially because of documented false environmental statements presented in annual reports. In the Massey Coal case in the US, as part of a legal settlement, Massey agreed to provide audited statements of workplace safety and protections of the environment (Harris 2011). The call for more auditor assurance of environmental reports is also reflected in personal interviews with international accounting firms. Some countries, e.g. Sweden, allow auditors to offer both positive and negative assurance on environmental reports, i.e. positive assurance in which auditors examine evidence as in a financial

audit and give a professional opinion about its reliability, and negative assurance in which the auditor states there is no reason to suspect the information is not reliable. Companies choose to provide environmental and social information, it is claimed, to obtain reputational benefits not necessarily related to risk. Assurance, if any, would be used to achieve greater reputational benefits; few companies are willing to pay for positive assurance because of limited perceived benefits.

Calls for greater assurance of sustainability information, however defined, are based on anecdotes, assertion, conjecture, etc. It seems fairly certain, though, that interests of investors and creditors in assessing sustainability risk in making decisions have been largely ignored and are just now being realized. As a result there is a current need for accounting research to assess investors' and creditors' perceived needs for assured sustainability information, how they use it, market reaction to the information, etc.

3.3. Financial failures, Reporting and Auditing failures, and Enforcement

Yet another set of accounting-for-sustainability situations within the past few years are the well-known financial sustainability failures and near failures of companies like Enron, WorldCom, Parmalat, and Ahold and financial institution failures in due to sub-prime mortgages. These financial sustainability failures resulted not only in investor and creditor losses but also massive losses for society and are clearly social and environmental sustainability issues as well. The sustainability failures were directly related to non-compliance with accounting standards, audit failures, and enforcement failures. In addition, the going concern concept implies financial sustainability and these organizations clearly were not going concerns. While there have been extensive research and publication about the high-profile cases, little research has been conducted in the context of accounting for

sustainability. Research has shown, however, continued lack of compliance with accounting standards and apparent lack of enforcement, especially in Europe (e.g. Carrara et al. 2010; Fagerström et al. 2009, 2007a, 2007b). It is also recognized that lack of adequate enforcement of accounting standards within in the EU is contributing to lack of reliability of published accounting reports and thus the ability of users of financial reports to assess sustainability risks. As widely reported in the business media, in October 2010, the European Commission announced its intention to examine compliance with accounting standards, the role of auditors, and enforcement. It is too soon to assess the consequences of this action by the European Commission, but it is clearly an issue within accounting for sustainability.

4. Research Issues

With the analysis above of accounting for sustainability in the context of traditional accounting theory and practice, and recent events, this agenda now develops some specific research issues along with research methods and data sources.

4.1. A Research Framework for Accounting for Sustainability

A conceptual framework to guide researchers and practitioners in accounting for sustainability is an essential first step in this research agenda because of various notions of sustainability and the roles of accounting in accounting for sustainability that exist at the moment, and lack of a common language. Such frameworks have been successful in guiding emerging areas of accounting research in the past. In the 1970s, as the phenomena of multinational companies became sufficiently large to warrant ongoing accounting research, a seminal study, *An Accounting Research Framework for Multinational Enterprises* (Cunningham 1978) facilitated accounting research for multinational enterprises for coming decades. A similar but less elaborate framework also

facilitated research into accounting research for performance reporting and accountability in governmental entities (Cunningham and Harris 2005) when this issue emerged as an issue for accounting research. Such a framework in accounting for sustainability would, among other things, identify, explore, and analyze systematically:

- Various notions of sustainability to assess which ones represent roles for accounting, and to what extent.

- Groups and individuals who have or potentially could have an involvement in accounting for sustainability, including Assistant Lecturers of reports; users of such information, e.g. banks and investment analysts; assurers of such information, i.e. auditors or similar groups; regulators; other organizations, e.g. the United Nations and its PRI academic network, who have taken a direct interest and action in the issue; and policy makers such as the European Commission.

- Different forms and levels of accountability, e.g. financial reporting and assurance thereof; integrated reporting of financial and other sustainability accounting information; reporting sustainability information outside the financial reports and assurance thereof; incorporating sustainability risk and use of resources in accounting measurements; other elements of accountability for sustainability risks; managerial accounting; management control systems; etc.

- Identifying and describing various notions of a sustainable entity that would be the object of accountability.

- Matching the interests of groups and individuals with regard to sustainability with different forms and levels of accountability.

- Developing a common language to discuss and guide future research.

Similar to *An Accounting Research Framework for Multinational Enterprises* (Cunningham 1978, pg. 1), this research framework seeks to facilitate continuing research in accounting for sustainability by describing in detail gaps in current knowledge, specific issues that require research, factors that should be considered when conducting the research, and suggesting research approaches. One important aspect is to identify failures in past research and means to overcome the failures. It also provides a common taxonomy and language for continuing research. Following Cunningham (1976, pp. 31-61) and sources cited by him, this part of the research agenda uses a general systems theory approach as the primary methodological and analytical tool (described in more detail shortly). General systems theory is especially well suited to develop conceptual frameworks in business contexts and especially for accounting research because it allows researchers to explore such relevant aspects as:

- The scope of the agenda and which systems are included in this scope.

- System boundaries, i.e. what is included in a system and what remains outside in the environment. **It is important to note (as discussed below) that the word “environment” has a different meaning than is commonly used in the literature on accounting for sustainability so far.** For this framework, boundary considerations are important for such issues as defining sustainability in accounting contexts; what is inside systems of accounting for sustainability, and what remains outside in the environment; and whether sustainability reporting and financial reporting are separate systems or can become integrated into a single reporting system.

- System regulation and control. For this framework, regulation and control factors deal not only with such obvious issues as standards and enforcement, but also what

type of outputs from accounting for sustainability are to be produced and for whom.

4.1.1. Methodology

This part of the research agenda uses the general systems methodology discussed in Cunningham (1978 Chapter two). General systems theory is not a theory per se but instead an approach to guide analysis and development of more specific research approaches. It is also a first step in grounded theory approaches which represent back and forth analyses of a system and its environment to build a theory.

-Under general systems theory, each system is viewed as part of a larger system and each system can be viewed as having one or more subsystems. The issue is to identify the system of interest for the research issue at hand, and the boundaries of that system. Thus, the system of interest can be defined in different ways for different research purposes. As discussed above, from a sustainability perspective, the system of interest can include a company and its supply chain as well as users of its products during the product life cycle. In defining the boundary of the system of interest, everything that remains outside the boundary is considered to be the environment. **As noted above, this definition of “environment” is different from the term “environment” used in the research literature to date which typically views environment as representing ecological resources.** Among other things, the analysis considers properties of the system of interest, properties of subsystems, and properties of the environment, including influences of each on the other.

Other important aspects of general systems theory are the notions of regulation and control. Control is generally defined as setting expectations, monitoring outcomes against those expectations, and taking actions if necessary to make necessary changes to achieve desired outcomes. Thus control

typically occurs outside a system in the environment, depending on how the boundary between a system and its environment is defined. Regulation represents activities and subsystems designed within a system to achieve the desired outcomes somewhat automatically without explicit intervention. Notions of what constitutes regulation and control differ depending on how the system of interest and the environment is defined. The concepts of regulation and control have obvious implications for accounting for sustainability. One example is establishing standards for sustainability reporting, a control function, and the steps taken by an entity to assure compliance with standards.

4.2. Reporting Sustainability Information

In some countries, e.g. Sweden, a form of integrated reporting is required for certain companies, e.g. those with state ownership, following the triple bottom line of the Global Reporting Initiative (GRI) (www.globalreporting.org/Home).

In addition, several other companies have been voluntarily reporting environmental and social information for some years. Recent attention to so-called integrated reporting has come from the Accounting for Sustainability Project

(www.accountingforsustainability.org). This project includes initiatives of the International Integrated Reporting Committee (IIRC)

(<http://www.integratedreporting.org/>) to develop a new reporting model that will better reflect the interconnected impact of financial, environmental, social and governance factors. The IIRC includes, among others, representatives from the major international accounting firms, securities exchanges, the Financial Accounting Standards Board (FASB) of the US, and the International Accounting Standards Board (IASB). As mentioned above, though, there is, however, no common notion of what constitutes integrated reporting.

Also as mentioned above, anecdotally, companies report such so-called sustainability

information and sometimes seek assurance of such to achieve reputational benefits. Research is needed to identify what type of reputational benefits companies expect to achieve. A further issue is establishing standards for sustainability reporting. The Global Reporting Initiative (GRI) (www.globalreporting.org/Home), a network-based organization based in the Netherlands, provides standards for voluntary reporting of supplemental sustainability disclosures. GRI reporting standards are required in Sweden for the companies that are required to report the so-called triple bottom line. The IIRC as part of the UN PRI is also establishing reporting standards. Research could be useful to determine the criteria by which companies, accounting firms and others choose reporting standards.

4.2.1. Research Methods

The primary research methods for this set of issues would be content analysis and field studies. With respect to content analysis, because of different notions of what represents integrated reporting, it would be useful to examine actual reports under the different approaches to learn differences and their impacts. Content analysis might also be used to examine reports of different companies that use different types of reporting standards to assess different impacts. A further analysis of the groups promulgating the standards to determine their intentions and desired results can be useful. Such content analyses can be complimented by field studies of the companies that currently report sustainability information to determine the difficulty or ease of implementation and extent of compliance. Field studies represent a form of grounded theory in which researchers engage with the field to discover phenomena of interest to be used to develop a theory. Field studies by Fagerström et al. (2009, 2007a, 2007b) have examined similar issues in implementation and compliance with reporting standards and provide a model for this research agenda.

Field studies can be useful to assess the reputational benefits companies attempt to achieve from reporting environmental and social information. Field study research by Cunningham and Harris (2005) on a similar topic about performance reporting of governmental entities was a significant contribution to accountability research for such entities and can also be used as a model in this research.

4.3. Users of Sustainability Information.

As mentioned in the background, research and discussion in accounting for sustainability so far have almost exclusively focused on companies that prepare and present sustainability information. There is very recent recognition that the needs of users of the information must be considered as well. The research framework for accounting for sustainability as described in 4.1 would necessarily address some of these issues. Research is also needed to address directly users' perceived needs and reactions to them. Anecdotal evidence suggests that financial analysts, one major user group, routinely discard supplemental environmental disclosures. Instead, anecdotally, analysts want information that allows assessment of risk. Somewhat contradictory prior research has shown that financial analysts, do consider sustainability risk information when making recommendations to their clients (H. Nilsson, et al. 2008). Other research reported by the SIRP (www.sirp.se) indicates a market reaction to sustainability risk under certain situations thus suggesting that some users of sustainability information do use such information. Research is needed not only to assess whether sustainability risk information is desired and used, but the form in which sustainability risk incorporated in accounting reports, e.g. in integrated reports, in product prices according to as suggested by Friedman (2009), and in other accounting measurements.

4.3.1. Research methods

Field study research methods similar to those discussed above (Fagerström et al. 2009, 2007a, 2007b) are useful to learn more about potential users of integrated reports, what they expect, different formats they prefer, and similar items. The primary research method for this issue could be experimental research along the lines used by Baker and Cunningham (1993) when assessing the perceptions of bankers about different sets of assurance standards on their loan decisions is a model for this analysis. With respect to experiments, persons in each treatment group would be *a priori* viewed as essentially identical and making the same types of decisions following the approach of Cunningham and Baker (1992). In their study, subjects of experiments were attending training and education classes sponsored by a professional bankers' association; the association supported the type of research and virtually all participants voluntarily chose to participate. The subjects for this and similar issues in this research agenda could be similar, not necessarily in educational classes, but groups of professionals who use reports of sustainability information. In addition, or alternatively, students could be used as surrogates for users of sustainability accounting information. Numerous accounting-related experiments using students as surrogates have been conducted and published by Michael Shields and Graeme Harrison, among others; these studies are too numerous to cite here, but can be readily located and examined. Similarly, experimental studies in sustainability under the auspices of the SIRP (www.sirp.se) have used students as surrogates for professionals who use sustainability information. These studies cite evidence that students perform as well as actual subjects in these types of experiments.

4.4. Auditing and Other Assurance of Sustainability Information

As mentioned in the introduction, background, and discussions above, a major emerging issue is the extent to which users of sustainability information expect assurance; at what level, negative or positive; and in what form, supplemental or incorporated in financial measurements. A further issue within this agenda issue is establishing both standards for sustainability reporting and standards against which assurance is given. As mentioned above, the Global Reporting Initiative (GRI), a network-based organization based in the Netherlands, provides standards for voluntary reporting of supplemental sustainability disclosures. The IIRC as part of the UN PRI is also establishing reporting standards. For assurance, as one example, major accounting firms in Sweden use assurance standards published by Föreningen Auktoriserade Revisorer (FAR) (www.far.se) in FAR RevR6

(http://www.far.se/pls/portal/docs/PAGE/FAR_2010/FAR_TYCKER/INFORMATIONSMATERIAL/GRANSKNINGAVHALLBARHETSREDOVISNING.PDF), although use of such standards is apparently voluntary. FAR RevR6 is taken from (essentially a translation of) the International Standard on Assurance Engagements 3000 (ISAE 3000)

(http://www.accountability21.net/uploadedFiles/Issues/ISAE_3000.pdf) developed in the Netherlands. A competing set of assurance standards, though, has been developed by AccountAbility

(<http://www.accountability.org/>) in its AA1000 AS. Despite the organization's claim of wide-spread acceptance, there is no indication that such standards are used in Nordic countries. Yet another set of standards is incorporated in the Greenhouse Gas Protocol Initiative

(<http://www.ghgprotocol.org/>).

These sets of assurance standards, while not always in direct competition because they relate to different types of sustainability

information, overlap sufficiently to create uncertainty and complexity in accountants' roles of providing assurance. Because of multiple sets of standards for both reporting and assurance, yet another set of issues to be addressed in this research agenda is the criteria by which companies and organizations providing assurance voluntarily choose standards to use in reporting and in assurance engagements. When sustainability information is included in accounting measurements, e.g. pricing products to include external resource costs and including sustainability risk in financial products, additional issues of reporting standards and assurance standards are presented. Similar issues are presented in integrated reporting when environmental and social concerns would be included in accounting measurements. Current accounting standards in almost every country, including Nordic countries, do not permit such accounting measurements; likewise auditing standards for such measurements are not available.

4.4.1. Research Methods

The previous research by Baker and Cunningham (1993) discussed above, is an ideal model for the type of research on assurance levels in this research agenda. In that experiment, bank loan officers were asked to make decisions based on financial statements prepared using, among other things, different levels of audit assurance and different accounting standards. Field studies like Fagerström et al. (2009, 2007a, 2007b) and Cunningham and Harris (2005) are a grounded theory approach useful models to examine auditors' perceptions of different levels of assurance and standards.

4.5. Financial Distress, Non-compliance with Financial Reporting Standards, and Lack of Enforcement

Despite the fact that past financial failures, notably Enron and sub-prime mortgage crises, have resulted in massive social costs, there is only recent recognition that financial

distress, often related to failure to consider different types of sustainability risk, non-compliance with financial reporting standards, and enforcement of accounting standards, is an issue of accounting for sustainability. As discussed in the introduction and background, though, Friedman (2009) views ecological risk and financial distress to be integrally related through inadequate accounting for risks. Even though financial and other sustainability risks are recently receiving attention, the going concern concept has been an essential concept in financial reporting and auditing for many years. Research would be useful to assess the extent to which users of financial information, notably banks, investment analysts, and financial analysts, view the link between financial distress risk and ecological risk as being integrally related as does Friedman (2009).

Non-compliance with financial reporting standards has been an accounting research topic for at least the last 10 years in which wide-spread non-compliance was discovered, and by implication apparent lack of enforcement (e.g. Carrara, et al. 2010, Fagerström et al. 2009, 2007a, 2007b; and sources cited by them). Such research, though, focused on detecting non-compliance without implications for sustainability. As indicated in these studies, non-compliance with accounting standards and lack of enforcement are readily apparent and should be apparent to users of financial reports. Research could assess the impact on apparent non-compliance with accounting standards on users of the information, notably bankers and bank investment analysts.

A very recent study by the publishers of the Asset 4 data base has indicated that companies that report sustainable information also have abnormal returns, suggesting that investors and/or analysts do not consider sustainability information in their decisions. By implication, failure to consider sustainability risk could lead to abnormally low returns or loss through financial failure.

Research is useful to assess any relation of negative or lack of reported sustainability information on low returns or failure.

4.5.1. Research Methods

This line of research could follow an approach by Baboukardos (2011, 2010). The research would involve content analysis of publicly listed European companies to identify lack of compliance. Examination of stock market reaction to the lack of compliance and other faulty financial information could then use the well-known value relevance model and other well known models that assess market reactions to accounting information. Among others outputs, the well known measurement of Tobin's Q gives an indicator of risk. Similar research methods can be used to assess the value relevance of negative sustainability information. In addition, the well known bankruptcy prediction models can be used to assess the ability of negative sustainability information to signal financial failure. The existence of the Asset 4 data base now facilitates research methods using large samples and more sophisticated quantitative methods.

5.0. Concluding discussion

This purpose of this paper has been to give structure to the diverse, disjointed area of research into accounting for sustainability, providing background, including identifying research issues, and possible research methods. In introduction and background discussions, it was apparent that the focus to date on reporting environmental, i.e. ecological, and sometimes social and governance information is narrow and inadequate. Instead, new additional research areas are emerging and some traditional research areas are taking on new perspectives. These include:

- A call for integrated reporting that integrates environmental (ecological), social, and governance information along with financial reports. Differing notions of

what represents integration exist, however.

- Interests of users of sustainability information, including integrated reports, must be considered.
- Calls for expanded roles of auditors and other assurers.
- Expanding research issues of financial failures, accounting and auditing failures, and lack of enforcement to recognize an essential sustainability component.

After presenting background, the paper analyzes the emerging issues against traditional accounting concepts, notably the postulates of going concern, entity, monetary unit and time period, the paper identified many research issues that need to be resolved. These were presented in five sets of research issues for accounting for sustainability

In the process, the paper presented background material and then identified five sets of research issues in accounting for sustainability along with methods and data sources for each:

- An accounting research framework for sustainability to be based on similar frameworks for other emerging accounting research issues using general systems theory approaches. This framework identifies systems of interest and the environment and necessarily challenges the traditional notions of reporting entity and time period, among others.
- Reporting of sustainability information which has been the focus of most research to date, and the emerging important topic of integrated reporting. The analysis challenges entity, monetary unit, and time period concepts as well as addresses which standards are to be used and how to incorporate environmental and social issues into accounting measurements.
- Users of sustainable information, their uses and perceived needs. This is an area that has been largely neglected in research to date. Research using field studies and

experiments is needed to assess users' needs and expectations.

- Auditing and assurance issues that are taking on greater importance as more users demand assurance for the sustainability information. Issues of which standards to be used can be explored and experiments would be used to assess users' expectations and how they react to different types and levels of assurance.

- Financial distress and sustainability consequences of accounting and enforcement failures that are just now being recognized as sustainability issues. Research using traditional market methods, notably the value relevance model and bankruptcy prediction models

This agenda while ambitious gives definite structure and clearly indicates a substantial change in traditional view of accounting, reporting, and auditing in a new era of sustainability.

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